

What is claimed is:

- 1 1. A method for viewing information, said method comprising,
2 employing one or more data objects contained within at least one data source,
3 employing a spatial paradigm to define hierarchical relationships between said
4 data objects,
5 generating an appearance of a subset of said data objects associated with said
6 spatial paradigm in a virtual space for display from an adjustable viewing perspective of
7 the user, and
8 enabling said user to navigate said data objects in a substantially unrestricted
9 fashion.
- 1 2. A method according to claim 1 further comprising, determining said appearance
2 for said subset of said data objects, wherein said appearance of at least one of said subset
3 of said data objects is dependent, at least in part, on said hierarchical relationships
4 between said one and said subset of said objects, and said viewing perspective of said
5 user.
- 1 3. A method according to claim 1 further comprising, changing said appearance in a
2 seemingly continuous, non-discrete manner in response to said user commanding an
3 adjustment of said viewing perspective.

- 1 4. A method according to claim 1 further comprising, storing said data objects
2 associated with said spatial paradigm in a database according to said hierarchical
3 relationships.
- 1 5. A method according to claim 1 further comprising, enabling a third party to define
2 at least a portion of said hierarchical relationships between at least a portion of said data
3 objects for a particular data source.
- 1 6. A method according to claim 1 further comprising, enabling a third party to
2 specify said spatial paradigm.
- 1 7. A method according to claim 4 further comprising, re-profiling said at least one
2 data source to update said data objects stored in said database.
- 1 8. A method according to claim 4 further comprising, deconstructing at least one
2 prior existing relationship between said data objects before storing said data objects in
3 said database.
- 1 9. A method according to claim 1 further comprising, extracting data objects
2 associated with said spatial paradigm from at least one Web server computer.
- 1 10. A method according to claim 1 further comprising, extracting said data objects
2 associated with said spatial paradigm from at least one of a legacy database, an algorithm,

3 a simulation, a live information feed, a model, a substantially real-time source, a file
4 system, a file and a storage device.

1 11. A method according to claim 1 further comprising, providing said virtual
2 appearance for each of said subset of said data objects by rendering selected details of
3 said subset of said data objects, wherein said selected details approximate a physical
4 appearance that said subset of said data objects would have to the user having said
5 viewing perspective.

1 12. A method according to claim 1 further comprising,
2 defining a virtual distance between a virtual location of said adjustable viewing
3 perspective and virtual locations of said subset of said data objects,
4 determining said appearance of said subset of said data objects, at least in part, in
5 dependence on said virtual distance, and
6 displaying said appearance to said user.

1 13. A method according to claim 12 wherein said step of displaying said appearance
2 further comprises, displaying more detail for said one of said data objects in response to
3 said virtual distance decreasing.

1 14. A method according to claim 12 wherein said step of displaying said appearance
2 further comprises, displaying less detail for ones of said data objects in response to said
3 virtual distance increasing.

1 15. A method according to claim 1 further comprising,
2 enabling said user to enter a term,
3 determining a correspondence between any of said data objects and said term, and
4 in response to determining a correspondence, including corresponding ones of
5 said data objects in said subset of said data objects.

1 16. A method according to claim 1 further comprising,
2 defining a viewing direction for said user,
3 defining an angle between said viewing direction and at least one of said data
4 objects, and
5 determining said appearance of said at least one of said data objects, at least in
6 part, in dependence on said angle.

1 17. A method according to claim 16 further comprising, fixing said viewing direction.

1 18. A method according to claim 1 further comprising,
2 defining a virtual position of said user in relation to said subset of said data
3 objects,
4 caching graphical information for one or more data objects virtually located
5 within a predefined vicinity of said user, and
6 employing said cached graphical information to provide said virtual appearance
7 for at least one of said one or more data objects in response to said user navigating within
8 a predefined virtual distance of said at least one of said one or more data objects.

1 19. A method according to claim 18 further comprising, determining whether one or
2 more data objects are virtually located within said predefined vicinity in dependence on
3 said hierarchical relationship of said data objects, starting from the virtual position of said
4 user.

1 20. A method according to claim 18 further comprising, determining whether one or
2 more data objects are virtually located within said predefined vicinity based on
3 predefined coordinates of said data objects in said virtual space, starting from the virtual
4 position of said user.

1 21. A method according to claim 1 further comprising, enabling said user to control
2 said viewing perspective.

1 22. A method according to claim 16 further comprising,
2 determining a projected virtual trajectory of said user by monitoring said user
3 control of said viewing perspective,
4 caching graphical information for one or more data objects virtually located along
5 said projected virtual trajectory, and
6 employing said cached graphical information to provide said virtual appearance
7 for at least one of said one or more data objects in response to said user continuing along
8 said projected virtual trajectory.

1 23. A method according to claim 1, further comprising,

2 defining a virtual distance between said user and each of said subset of said data
 3 objects,
 4 enabling said user to increase and decrease said virtual distance with respect to
 5 each of said subset of said data objects, and
 6 determining said appearance of said subset of said data objects, at least in part, in
 7 dependence on said virtual distance.

1 24. A method according to claim 23 further comprising,
 2 defining a rate of change of said virtual distance, and
 3 determining said appearance of said subset of said data objects, at least in part, in
 4 dependence on said rate of change of said virtual distance.

1 25. A method according to claim 24 further comprising,
 2 enabling said user to control said rate of change of said virtual distance.

1 26. A method according to claim 24 further comprising,
 2 enabling said user to pass by ones of said subset of said data objects in response to
 3 said user changing said virtual distance, and
 4 in response to said rate of change of said virtual distance increasing, determining
 5 said ones of said subset of said data objects to be rendered with less detail.

1 27. A method according to claim 24 further comprising,

2 enabling said user to pass by ones of said subset of said data objects in response to
3 said user changing said virtual distance, and
4 in response to said rate of change of said virtual distance decreasing, determining
5 said ones of said subset of said data objects to be rendered with more detail.

1 28. A method according to claim 23 further comprising,
2 defining a virtual acceleration, and
3 determining said appearance of said subset of said data objects, at least in part, in
4 dependence on said virtual acceleration.

1 29. A method according to claim 28 further comprising,
2 enabling said user to control said virtual acceleration.

1 30. A method according to claim 1 further comprising,
2 defining a virtual translational position of said user with respect to said subset of
3 said data objects, and
4 determining said appearance of said subset of said data objects, at least in part, in
5 dependence on said translational position.

1 31. A method according to claim 30 further comprising,
2 enabling said user to change said translational position with respect to said subset
3 of said data objects.

1 32. A method according to claim 30 further comprising,
2 defining a rate of change of said translational position, and
3 determining said appearance of said subset of said data objects, at least in part, in
4 dependence on said rate of change of said translational position.

1 33. A method according to claim 32 further comprising,
2 enabling said user to control said rate of change of said translational position.

1 34. A method according to claim 32 further comprising,
2 enabling said user to pan past ones of said subset of said data objects in response
3 to said user changing said translational position, and
4 in response to said rate of change of said translational position increasing,
5 determining said ones of said subset of said data objects to be rendered with less detail.

1 35. A method according to claim 32 further comprising,
2 enabling said user to pan past ones of said subset of said data objects in response
3 to said user changing said translational position, and
4 in response to said rate of change of said translational position decreasing,
5 determining said ones of said subset of said data objects to be rendered with more detail.

1 36. A method according to claim 30 further comprising,
2 defining a translational acceleration, and

3 determining said appearance of said subset of said data objects, at least in part, in
4 dependence on said translational acceleration.

1 37. A method according to claim 36 further comprising,
2 enabling said user to control said translational acceleration.

1 38. A method according to claim 1 further comprising,
2 defining a viewing direction for said user,
3 defining a viewing angle between said viewing direction and said subset of said
4 data objects,
5 enabling said user to change said viewing angle with respect to said subset of said
6 data objects, and
7 determining said appearance of said subset of said data objects, at least in part, in
8 dependence on said viewing angle.

1 39. A method according to claim 38 further comprising,
2 defining a rate of change of said viewing angle, and
3 determining said appearance of said subset of said data objects, at least in part, in
4 dependence on said rate of change of said viewing angle.

1 40. A method according to claim 39 further comprising,
2 enabling said user to control said rate of change of said viewing angle.

1 41. A method according to claim 39 further comprising,
 2 enabling said user to pan past ones of said subset of said data objects in response
 3 to said user changing said viewing angle, and
 4 in response to said rate of change of said viewing angle increasing, determining
 5 said ones of said subset of said data objects to be rendered with less detail.

1 42. A method according to claim 39 further comprising,
 2 enabling said user to pan past ones of said subset of said data objects in response
 3 to said user changing said viewing angle, and
 4 in response to said rate of change of said viewing angle decreasing, determining
 5 said ones of said subset of said data objects to be rendered with more detail.

1 43. A method according to claim 39 further comprising,
 2 defining an angular acceleration, and
 3 determining said appearance of said subset of said data objects, at least in part, in
 4 dependence on said angular acceleration.

1 44. A method according to claim 43 further comprising,
 2 enabling said user to control said angular acceleration.

1 45. A method according to claim 1 wherein in said spatial paradigm is a physical
 2 paradigm including at least one of finance, education, government, sports, media, retail,
 3 travel, geographic, real estate, medicine, physiology, automotive, mechanical, database,

4 e-commerce, news, infrastructure, engineering, scientific, fashion-based, art-based,
5 music-based, anatomy, surveillance, agriculture, petroleum industry, inventory, search
6 engines and internal personal digital assistant structure.

1 46. A method according to claim 1 further comprising, displaying said appearance on
2 a client.

1 47. A method according to claim 46 wherein the step of displaying said appearance
2 further comprises, displaying said subset of said data objects on one of a television, a
3 personal computer, a laptop computer, a wearable computer, a personal digital assistant, a
4 wireless telephone, a kiosk, a key chain display, a watch display, a touch screen, an
5 aircraft display, a watercraft display, an automotive display, a video game display, a
6 vending machine, a display and sound playing device.

1 48. A method according to claim 1 further comprising,
2 organizing said data objects in a plurality of hierarchical plates for display,
3 wherein each of said hierarchical plates includes one or more of said data objects.

1 49. A method according to claim 48 further comprising,
2 displaying to said user at least a subset of said one or more of said data objects
3 included in a first one of said hierarchical plates.

1 50. A method according to claim 49 further comprising,

2 defining virtual distances from each of said hierarchical plates to said user,
3 as said virtual distance from said first one of said hierarchical plates to said user
4 decreases, displaying a reduced number of said one or more of said data objects included
5 in said first one of said hierarchical plates, and displaying more detail with respect to said
6 reduced number, and
7 as said virtual distance from said first one of said hierarchical plates to said user
8 increases, displaying an increased number of said one or more of said data objects
9 included in said first one of said hierarchical plates, and displaying less detail with
10 respect to said reduced number.

1 51. A method according to claim 48 further comprising, defining at least one of said
2 hierarchical plates to be translucent, wherein said one or more data objects stored on a
3 second one of said hierarchical plates located at a greater virtual distance from said user
4 than said first one of said hierarchical plates can be at least partially viewed by said user
5 through said first one of said hierarchical plates.

1 52. A method according to claim 48 further comprising, defining at least one of said
2 hierarchical plates to be opaque, wherein said one or more data objects stored on a second
3 one of said hierarchical plates located at a greater virtual distance from said user than said
4 first one of said hierarchical plates cannot be viewed by said user through said first one of
5 said hierarchical plates.

1 53. A method according to claim 48 further comprising,

2 defining a closest one of said hierarchical plates as having a smallest one of said
3 virtual distances, and
4 employing said closest one of said hierarchical plates as said first one of said
5 hierarchical plates.

1 54. A method according to claim 48 further comprising,
2 organizing conceptually said data objects in said plurality of hierarchical plates by
3 including in each of said plurality of hierarchical plates hierarchically equivalent ones of
4 said one or more data objects.

1 55. A method according to claim 48 further comprising,
2 defining a virtual translational position of said user with respect to said subset of
3 said one or more data objects,
4 enabling said user to change said translational position with respect to said subset
5 of said one or more data objects, and
6 determining said appearance of said subset of said one or more data objects, at
7 least in part, in dependence on said translational position.

1 56. A method according to claim 55 further comprising,
2 determining said subset of said one or more data objects, at least in part, in
3 dependence on said translational position of said user.

1 57. A method according to claim 50 further comprising, enabling said user to vary
2 said virtual distance with respect to each of said hierarchical plates.

1 58. A method according to claim 53 further comprising,
2 defining a threshold smallest virtual distance at which said closest one of said
3 hierarchical plates is determined to be located virtually behind said user,
4 in response to said user navigating to said threshold smallest virtual distance,
5 ceasing to display said closest one of said hierarchical plates, and
6 defining a hierarchical plate having a next smallest virtual distance to be said
7 closest one of said hierarchical plates.

1 59. A method according to claim 58 further comprising, providing a visual indication
2 to said user as to which of said hierarchical plates is being displayed.

1 60. A method according to claim 59 wherein the step of providing further comprises,
2 employing a breadcrumb trail.

1 61. A method according to claim 59 further comprising, enabling said user to select a
2 representation of one of said hierarchical plates displayed in said visual indication to
3 change said appearance to said selected one of said hierarchical plates.

1 62. A method according to claim 59 further comprising, employing concentric
2 graphical screens to provide said visual indication.

1 63. A method according to claim 59 further comprising, employing a graphical
2 display to provide said visual indication.

1 64. A method according to claim 59 further comprising, employing a textual display
2 to provide said visual indication.

1 65. A method according to claim 50 further comprising,
2 defining said hierarchical plates to have a virtual thickness, wherein said virtual
3 thickness provides an indication of a virtual distance from said user to a particular data
4 object in said hierarchical plate,
5 enabling said user to virtually navigate through said hierarchical plate,
6 in response to said user navigating through said hierarchical plate to decrease said
7 virtual distance from said user to said particular data object, displaying more detail with
8 respect to said particular data object, and
9 in response to said user navigating through said hierarchical plate to increase said
10 virtual distance from said user to said particular data object, displaying less detail with
11 respect to said particular data object.

1 66. A method according to claim 1 further comprising, enabling said user to control
2 said viewing perspective by way of a hand-held device.

1 67. A method according to claim 66 further comprising, providing in said hand-held
2 device a pointing portion adapted to enable said user to control said viewing perspective.

68. A method according to claim 67 further comprising enabling said user control of
said viewing perspective by actuating said pointing portion along a longitudinal axis.

69. A method according to claim 66 further comprising, providing on said hand-held device at least one of a plurality of control buttons, a microphone, a speaker, and a tactile generator.

1 70. The method of claim 69 wherein said control buttons are adapted to enable said
2 user to control said viewing perspective.

1 71. The method of claim 69 wherein said control buttons are adapted to perform a
2 predefined transaction.

1 72. A method according to claim 1 further comprising, providing a kiosk adapted to
2 perform said displaying.

1 73. A method according to claim 1 further comprising,
2 displaying to said user discrete viewing options,
3 in response to selection of a particular one of said discrete viewing options,
4 altering said viewing perspective of said user.

1 74. A method according to claim 73 further comprising, providing a kiosk adapted to
2 perform said displaying.

- 1 75. A method according to claim 1 further comprising,
2 displaying to said user five discrete viewing options, and
3 in response to selection of a particular one of said discrete viewing options
4 altering said viewing perspective of said user.
- 1 76. A method according to claim 75 wherein the display step further comprises,
2 displaying to said user five discrete viewing options arranged to fit a hand.
- 1 77. A method according to claim 75 further comprising, providing a kiosk adapted to
2 perform said displaying.
- 1 78. A method according to claim 4 further comprising,
2 performing at least one of said storing and said displaying on a first device, and
3 enabling said user to transfer said data objects from said first device to a second
4 device.
- 1 79. A method according to claim 1 further comprising, enabling one of said user and
2 a developer to modify said appearance of said data objects.
- 1 80. A method according to claim 79 wherein the step of enabling further comprises,
2 enabling one of said user and said developer to modify at least one of a coordinate, a
3 position, a height, a width and a depth of said appearance of said data objects.

1 81. A method according to claim 79 wherein the step of enabling further comprises,
2 providing a graphical user interface to modify said appearance of said data objects.

1 82. A method according to claim 1 further comprising, enabling one of said user and
2 a developer to modify said hierarchical relationships between said data objects.

1 83. A method according to claim 82 wherein the step of enabling further comprises,
2 enabling one of said user and said developer to modify at least one of a parent-child
3 relationship, a coordinate relationship, a zoom-to relationship and a link-to relationship of
4 said hierarchical relationships between said data objects.

1 84. A method according to claim 82 wherein the step of enabling further comprises,
2 providing a graphical user interface for performing said modification.

1 85. A method according to claim 1 further comprising, automatically adjusting said
2 viewing perspective according to a predefined traversal of said hierarchical relationship
3 between said data objects.

1 86. A method according to claim 1 further comprising,
2 defining a coordinate system including at least three dimensions in said virtual
3 space, and
4 locating said data objects in said virtual space according to said coordinate
5 system.

1 87. A method according to claim 86 further comprising,
2 defining said adjustable viewing perspective of said user viewing said appearance
3 of said subset of said data objects in accordance with said coordinate system, and
4 determining said appearance for said subset of said data objects in dependence, at
5 least in part, on said adjustable viewing perspective of said user.

1 88. A method according to claim 1 further comprising, employing a first template,
2 wherein said first template relates to a first spatial paradigm, and defines hierarchical
3 relationships between data objects.

1 89. A method according to claim 88 further comprising,
2 employing a second plurality of data objects associated with a second spatial
3 paradigm from at least one data source, and
4 employing a second template, wherein said second template relates to said second
5 spatial paradigm, and defines hierarchical relationships between data objects.

1 90. A method according to claim 89 further comprising, determining said appearance
2 for a second subset of said second plurality of data objects, wherein said appearance of at
3 least one of said second subset is dependent, at least in part, on said hierarchical
4 relationships between said one and said second subset, and said viewing perspective of
5 said user.

1 91. A method according to claim 89 further comprising, changing said appearance in
2 a seemingly continuous, non-discrete manner in response to said user commanding an
3 adjustment of said viewing perspective.

1 92. A method according to claim 89 further comprising, storing said data objects
2 associated with said second physical paradigm in a database according to said
3 hierarchical relationships defined by said second template.

1 93. A method according to claim 89 further comprising,
2 enabling said user to alter a viewing perspective,
3 in response to said user altering said viewing perspective, displaying to said user a
4 virtual appearance of a subset of said data objects corresponding to said second spatial
5 paradigm, and
6 determining said appearance of said subset of said data objects corresponding to
7 said second spatial paradigm, at least in part, in dependence on said viewing perspective
8 of said user.

1 94. A method according to claim 1 further comprising generating said appearance of a
2 subset of said data objects using a two dimensional matrix of pixels.

1 95. A method according to claim 1 further comprising generating said appearance of a
2 subset of said data objects using an array of vector elements.

1 96. A method according to claim 1 further comprising generating a node tree to
2 represent said hierarchical relationships between said data objects, each node of said node
3 tree representing each data object.

1 97. A method according to claim 96 further comprising generating said appearance of
2 a subset of said data objects wherein said appearance portrays one or more data objects
3 corresponding to one or more parent nodes on a same level of said node tree.

1 98. A method according to claim 96 wherein the step of generating said appearance
2 further comprises generating said appearance of a subset of said data objects wherein said
3 appearance portrays one or more data objects corresponding to one or more children
4 nodes of said parent nodes in less detail, said less detail creating an appearance that those
5 data objects corresponding to said children nodes are farther away from user than said
6 data objects corresponding to said parent nodes.

1 99. A method according to claim 96 further comprising generating said appearance of
2 a subset of said data objects wherein said appearance portrays all data objects
3 corresponding to each node on a same level of said node tree.

1 100. A method according to claim 1 further comprising, enabling said user to control
2 said viewing perspective by way of a wireless hand-held device.

1 101. A method according to claim 1 wherein in said physical paradigm belongs to a
2 category of one of information, entertainment, services and transactions.

1 102. A method according to claim 1 further comprising, providing said appearance for
2 each of said subset of said data objects by rendering selected details of said subset of said
3 data objects in dependence on processing capabilities of a client device.

1 103. A method according to claim 1 further comprising, providing said appearance for
2 each of said subset of said data objects by rendering selected details of said subset of said
3 data objects in dependence on a communication channel capability.